



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

order 9390 Ship 14 Nov
Alone
(7)

D3391-025
Job Sheet 183591



Part No: D3391-025

Job Qty: 1 ea

Part Name: Aft Tube Assembly



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 9/21/18

Job Tracking No:

Due Date: 11/14/18

Created By: Marie Lajeunesse

Type: SOLD

Description:

Note: DWG REV J SHEETS 9,10,11 IPP Rev B 06-02-07 ECN773 dwg rev. D EC IPP Rev:C 06-03-28 Update
Manuf. Instructions JLM IPP rev D 07.03.20 revF dwg EC IPP rev E 07.11.07 rev G dwg ecn 1053p EC verified
by: DD IPP Rev:F 07-11-13 ECN 1056 DD verified by: EC IPP Rev:G 08-09-10 revH as per dwg DD verified
by:EC IPP Rev:H 11.11.14 AS PER REV.I DD verified by:JLM

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea		11/14/18	0.00	0.00	Start Up Crosstubes		MD
100	Mori Seiki	1 pcs		11/14/18	2.49	4.17	Mori Seiki TL-40		MD 8-0-18
110	QC	1 pcs		11/14/18	0.00	0.00	QC2-1		MD 8-0-18
112	QC	1 pcs		11/14/18	0.00	0.00	QC5		38 9-89
120	CNC Vertical Machining	1 pcs		11/14/18	0.00	2.63	HAAS1-3		JLM
130	QC	1 pcs		11/14/18	0.00	0.00	QC2 Machining-2		JLM DAS
140	QC	1 pcs		11/14/18	0.00	0.00	QC8 Machining-2		OCT 29 2018 68
150	Skidtubes	1 pcs		11/14/18	0.00	1.03	Skidtubes-4		MGR 9-89
160	CNC Bend Skidtubes	1 pcs		11/14/18	0.00	1.33	CNC Bend Skidtube		MGR
170	QC	1 pcs		11/14/18	0.00	0.00	QC5		DE
180	Skidtubes	1 pcs		11/14/18	0.00	1.03	Skidtubes-4		DJ DAS
190	QC	1 pcs		11/14/18	0.00	0.00	QC5		38
200	HandFinish	1 pcs		11/14/18	0.00	0.58	HandFinish1		D.R 18/11/01
210	QC	1 pcs		11/14/18	0.00	0.00	QC7-2		MGR
220	Skidtubes	1 pcs		11/14/18	0.00	1.41	Skidtubes-4		MGR DAS
230	QC	1 pcs		11/14/18	0.00	0.00	QC5		38
235	HandFinish	1 pcs		11/14/18	0.00	0.58	HandFinish2		DR 18/11/07
240	SprayPaint	1 pcs		11/14/18	0.00	0.25	Spray Paint		Rec'd. JIR
242	Outsource	1 pcs		11/14/18			ATE003-VC		NOV 12 2018 18-11-8
250	QC	1 pcs		11/14/18	0.00	0.00	QC14		DAS 10-8
260	HandFinish	1 pcs		11/14/18	0.00	0.58	HandFinish4		BE 18-11-12 DAS
270	QC	1 pcs		11/14/18	0.00	0.00	QC5		DAS NOV 14 2018 68
280	Packaging	1 pcs		11/14/18	0.00	0.00	Packaging3-1		DAS 9-89
290	QC21-SA	1 Ea		11/14/18	0.00	0.00	QC21		21 9-89 NOV 14 2018

Part Op 100 - Turn as per Folio FA599 Rev: J & Dwg D3391 Rev: J ***ensure steady rest is turning true*** **REMOVE
Descriptions: STEADY REST AND MACHINIG MARKS***

120 - 1-Machine as per Folio FA 599 Rev: J & Dwg D3391 Rev: J

140 - ***INSPECT INSIDE BORE***

150 - 1-Drill (PILOT HOLE) aft cap holes per Dwg D3391 using DT8803

160 - Form as per Dwg D3391 Using Bend Prog 3391025

180 - 1-Open Aft cap pilot hole to .208" as per Dwg D3391 2-Drill float bag holes using DT8809 as per Dwg D3391(Holes

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION		AGAINST DEPARTMENT/PROCESS					
	Rework ☐	Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐			
	Scrap ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐			
	Use-as-is ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐			
	Suspected Unapproved ☐	Large Fab ☐	Composite ☐	Supplier ☐				

Date : _____ Step #: _____

Description Work Order Deviation

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Part: D3391 - 025
Job No: 183591
Serial No/Batch: S117672
 Revision: _____
 Inspector: _____
 Exp Date: _____
 Instructions: Various STC's

Date: 10/12/18

DART AEROSPACE
Container No: S117672

 1270 Aberdeen Street
 Hawkesbury, ON K6A 1K7
 CANADA
 TEL.: 1 813 632-5200
 Email: sales@dartaero.com
 www.dartaerospace.com

Root Cause			
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	
Design ☐	Operator ☐	Bending ☐	
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	
Equip/Tooling ☐	Supplier ☐	Cracks ☐	
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐
Past Expiry Date ☐	Manufacturing Process ☐		
Misidentified ☐	Past Due ☐		
		OTHER : _____	

marked "A" Only. 3-Drill wearplate holes as per Dwg D3391 using DT8878(Mid Tube) & DT8217 Wearplate Jig . *****Do Not Open To Finished Size***** 4-Drill Wearshoe holes as per DWG D3391 using DT8939 locating from 2 previously drilled aft wearplate holes. 5-Open wearplate holes to 0.297" and c'bore as per dwg D3391. 6-Open up all float bag holes to 0.328" and c'sink as per Dwg D3391. 8- Scribe batch # on fwd end + Debur

220 - 1- Instal spacers as per dwg D3391 A/R Magnabond 6398 Batch: 500785 exp. date : 19-05-01 cure time 12hrs as per QSI0015 2- Grind crossbolts flush 3- Back drill using #9 drill 4- Touchup Magnabond 5- Debur

235 - AND REALODINE AS PER PAR09-043

240 - PRIME AS PER DWG AND QSI005 4.2.1.3.3 P0041657

260 - 1-Install inserts as per Dwg D3391 2-Install Aft Cap as per Dwg D3391 A/ R Sikaflex-241/-291 _____ Sikaflex expiry date: _____ 3- INSTALL WEARPLATES AS PER DWG

290 - 5- Detail DD, open (5) forward wearplate holes 0.375", then use DT10247 and drill holes for nutplates and c'sink. 6-Open wearplate holes to 0.297" and c'bore as per dwg D3391. ***SIX FARTHEST AFT HOLES ONLY*** 7-Open up all float bag holes to 0.328" and c'sink as per Dwg D3391. 8-Debur 9- Scribe batch # on fwd end

NutPlate

#5
DT10247
↳ Ream
↳ CSink
#6 Fwd wearplate
as per
5x .375

8139427

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D6014-090	Aluminum Extrusion	1 Ea (1 ea)	90-Start up Operation	
D3670-4-200	Bushing	4 Ea (4 ea)	220-Skidtubes	<u>5081002</u>
ALS4-1032-130	Rivnut	8 Ea (8 ea)	260-HandFinish	<u>5007279</u>
ALS4-1032-225	Rivnut	4 Ea (4 ea)	260-HandFinish	<u>5058138</u>
AN3C4A	Bolt	6 Ea (6 ea)	260-HandFinish	<u>5095223</u>
AN3C5A	Bolt	4 Ea (4 ea)	260-HandFinish	<u>5095214</u>
D2646	Aft Cap	1 Ea (1 ea)	260-HandFinish	<u>M169254-10 2</u>
D3672-1	Washer, Phenolic	2 Ea (2 ea)	260-HandFinish	<u>F164008</u>
D4095-047	Wearpad Aft	1 Ea (1 ea)	260-HandFinish	<u>5025094</u>
D4095-049	Wearpad Aft	1 Ea (1 ea)	260-HandFinish	<u>5018296</u>
MS20601-AD4W3	Rivet	12 Ea (12 ea)	260-HandFinish	<u>5092687</u>
MS20601-AD4W7	Rivet	8 Ea (8 ea)	260-HandFinish	<u>M137148</u>
MS21075L5	Nut Plate	10 Ea (10 ea)	260-HandFinish	<u>5093726</u>
NAS1149C0332R	Washer	10 Ea (10 ea)	260-HandFinish	<u>5089465</u>

M.M. 006396

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	D6014-090	1	17	0
220-Skidtubes	D3670-4-200	4	43	0
260-HandFinish	ALS4-1032-130	8	12,174	0
	ALS4-1032-225	4	1,947	0
	AN3C4A	6	2,249	0
	AN3C5A	4	1,934	0
	D2646	1	68	0
	D3672-1	2	988	0
	D4095-047	1	23	0
	D4095-049	1	32	0
	MS20601-AD4W3	12	889	0
	MS20601-AD4W7	8	129	0
	MS21075L5	10	374	0
	NAS1149C0332R	10	5,211	0

Part Specifications

Specifications could not be found.

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation			Disposition		
			Completed By		
			Lead hand / Supervisor Approval Verification		
			QC / QA Coordinator Approval		
Root Cause		FAULT CATEGORY			
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐
Past Expiry Date ☐	Manufacturing Process ☐				
Misidentified ☐	Past Due ☐	OTHER : _____			

(7)

DART AEROSPACE LTD		Work Order: 183591
Description: Float Skidtube (412)		Part Number: D3391-3
Inspection Dwg: D3391 Rev: J		Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Lathe Section						
14.000	+/-0.010	14.000	✓		Tape	
3.500	+/-0.010	3.504	✓		CNC-08	
Ø3.200	+/-0.010	3.204	✓		CNC-05	
Ø3.750	+/-0.010	3.754	✓		CNC-05	
30° x 0.060 chamfer	+/-0.010	.067	✓		CNC-08	
88.93	+/-0.030	88.935	✓		Tape	

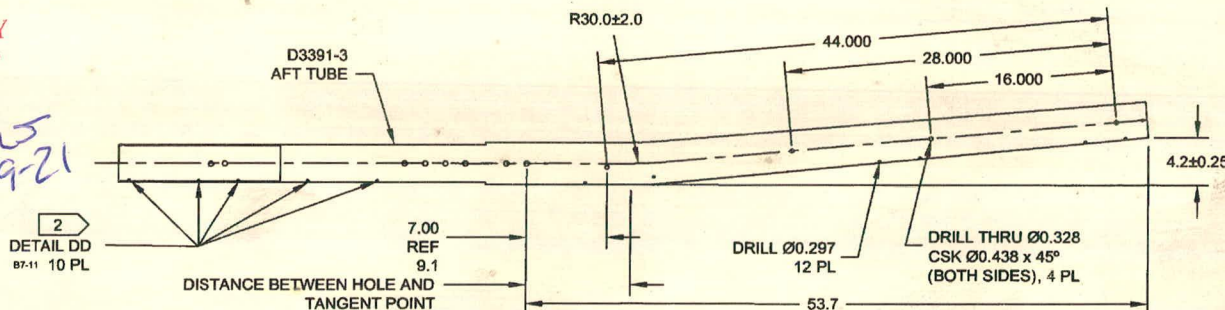
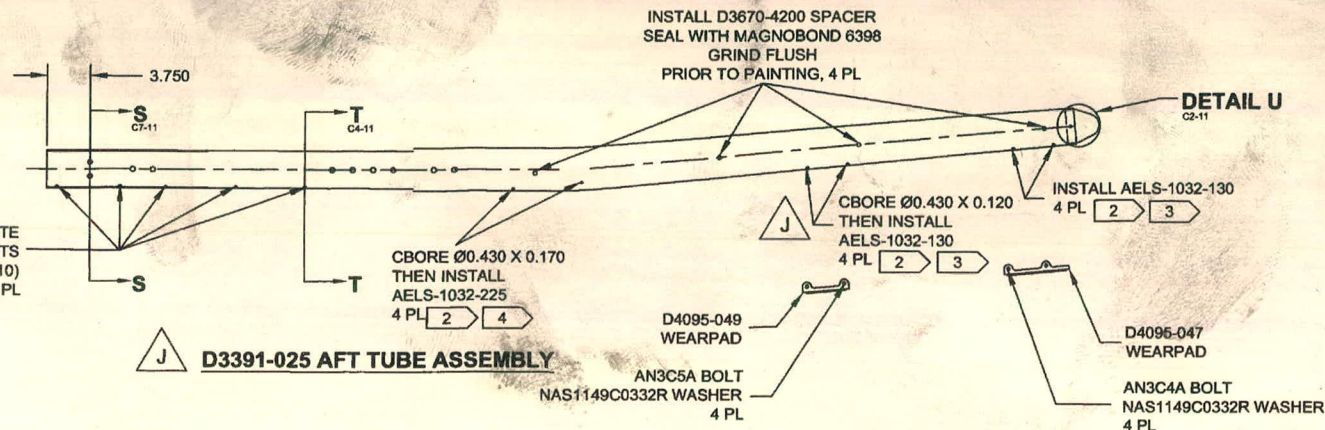
Measured by:	Date:
Audited by:	Date:

HAAS Section						
1.526	+0.000/-0.030	1.508	✓		Vernier	
7.500	+/-0.010	7.500	✓		Tape	
27.750	+/-0.010	27.750	✓		Tape	
31.750	+/-0.010	31.750	✓		Tape	
35.250	+/-0.010	35.250	✓		Tape	
3.300	+/-0.010	3.299	✓		micrometer	34
0.200	+/-0.010	.200	✓		Pin gauge	
3.520	+/-0.010	3.519	✓		micrometer	34
0.687	+0.010/-0.000	.688	✓		Vernier	
R0.062	+/-0.010	R0.062	✓		Gage	
Ø0.484	+0.005/-0.001	.4840	✓		Pin gauge	

Measured by:	Date:
Audited by:	Date:

Rev	Date	Change	Revised by	Approved
A	06.04.24	New Issue P/O D3391-015/-025	KJ/JLM	
B	06.06.19	Dwg revision update	KJ/JLM	
C	07.04.20	Ø0.208 dimension removed	KJ/JLM	
D	07.09.06	0.400 dimension removed	KJ/JLM	
E	07.11.23	Dwg Rev. updated	KJ/EC/DD	
F	09.04.27	Dimensions updated per Rev H and NCR09-028	KJ/JLM	
G	09.11.16	Dimension 0.200 removed	KJ	
H	11.06.21	Dimension 44.995 removed	KJ	
I	12.05.15	Dwg Rev updated	KJ	
J	12.05.23	Dimension updated	KJ	
K	12.10.15	88.93 dimension removed	KJ	
L	12.11.28	88.93 dimension added	KJ	
M	16.06.23	Dimensions updated per Rev J	KJ	

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SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 1835911 MLJ
18-09-21



J BENDING AND DRILLING DETAIL

D3391-025 AFT TUBE ASSEMBLY PARTS LIST

QTY	PART NUMBER	DESCRIPTION
X	D3391-025	AFT TUBE ASSEMBLY
1	D2646	AFT CAP
1	D3391-3	AFT TUBE
4	D3670-4200	SPACER
2	D3672-1	WASHER
1	D4095-049	WEARPAD
1	D4095-047	WEARPAD
8	AELS-1032-130	INSERT
4	AELS-1032-225	INSERT
6	AN3C4A	BOLT
4	AN3C5A	BOLT
20	MS20601AD4	RIVET, BLIND
10	MS21075L5	NUT PLATE FLOATING
10	NAS1149C0332R	WASHER

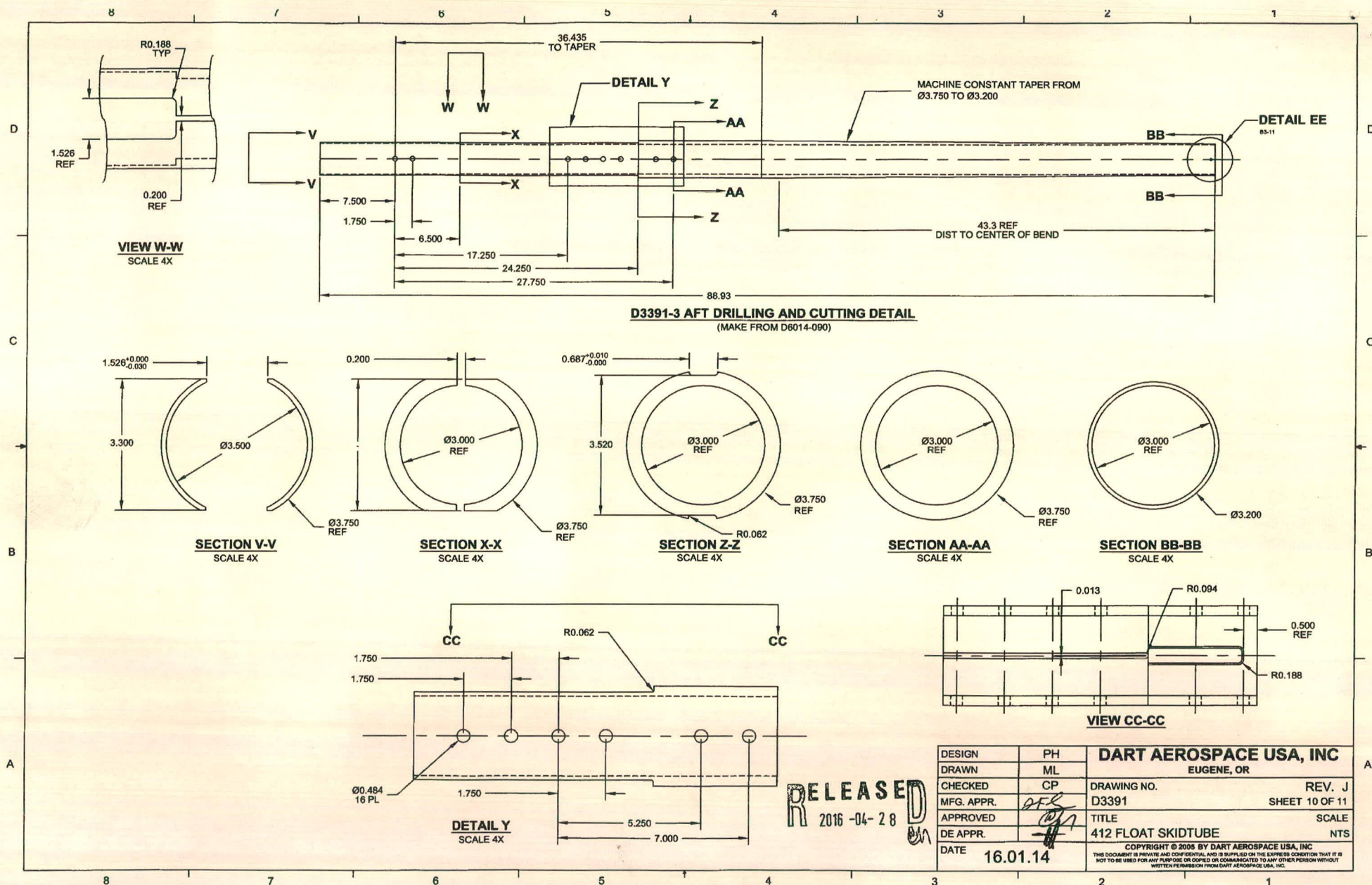
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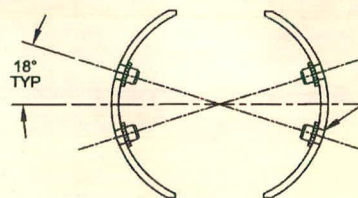
- 1) COAT ALL EXPOSED FASTENERS WITH LPS "LPS PROCYON"
- 2) USE DART DRILL TEMPLATE DT8217 TO LOCATE AND DRILL Ø0.297 AND Ø0.375 HOLES FOR WEARSHOE INSERTS AND NUTPLATES. C'BORE AS NOTED AND INSTALL INSERT/NUTPLATES EXCEPT WHERE INDICATED. USE NUT PLATE DRILL JIG IF REQUIRED.
- 3) ENSURE WALL THICKNESS IS BETWEEN 0.070 AND 0.130 BEFORE INSTALLING INSERT
- 4) ENSURE WALL THICKNESS IS BETWEEN 0.130 AND 0.225 BEFORE INSTALLING INSERT

RELEASED
2016-04-28

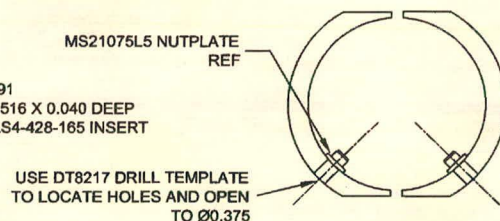
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DRAWN	ML	EUGENE, OR	
CHECKED	CP	DRAWING NO.	REV. J
MFG. APPR.		D3391	SHEET 9 OF 11
APPROVED		TITLE	SCALE
DE APPR.		AFT TUBE ASSEMBLY	NTS
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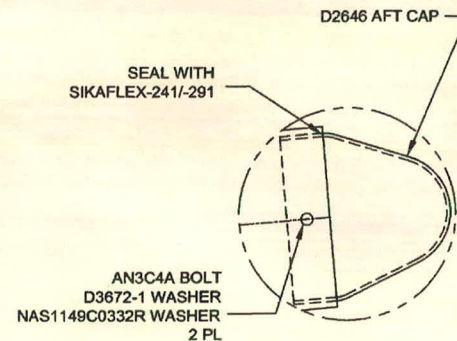




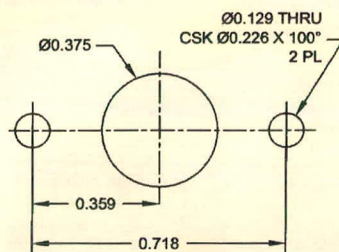
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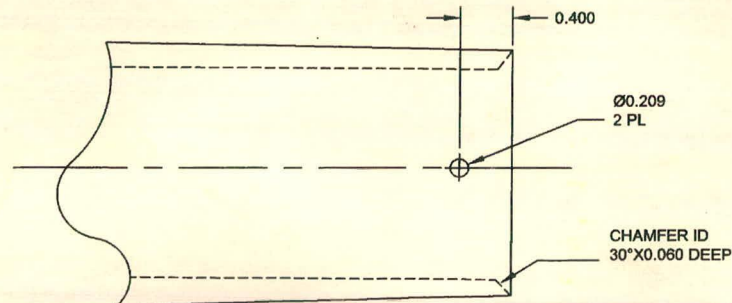
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SCALE 5X



DETAIL U
SCALE 5X



DRILLING DETAIL DD
SCALE 10X



DETAIL EE
SCALE 2X

NOTES:
1) USE INDUSTRY STANDARD NUT PLATE DRILL JIG IF REQUIRED.

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